



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of

FENG et al

Atty. Ref.: 839-1055; Confirmation No. 9113

Appl. No. 10/810,856

TC/A.U. 1775

Filed: March 29, 2004

Examiner: Baldwin, G.

For: SILICON MODIFIED BOND COAT IN THERMAL BARRIER COATING FOR  
SUPERALLOYS

\* \* \* \* \*

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

**DECLARATION**

I, Ganjiang Feng, hereby declare and state that:

1. I am a co-applicant in the present application.
2. The attached microphotograph shows that the co-presence of tantalum and silicon in interdiffusion zones of the coating causes formation of unwanted TaSi and TaTiSi intermetallic phases. These phases lead to a hardness increase and embrittlement of the coating. Thus, addition of tantalum to silicon-containing bond coats causes early TBC failure, which is undesired.

I declare that all statements herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of

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Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

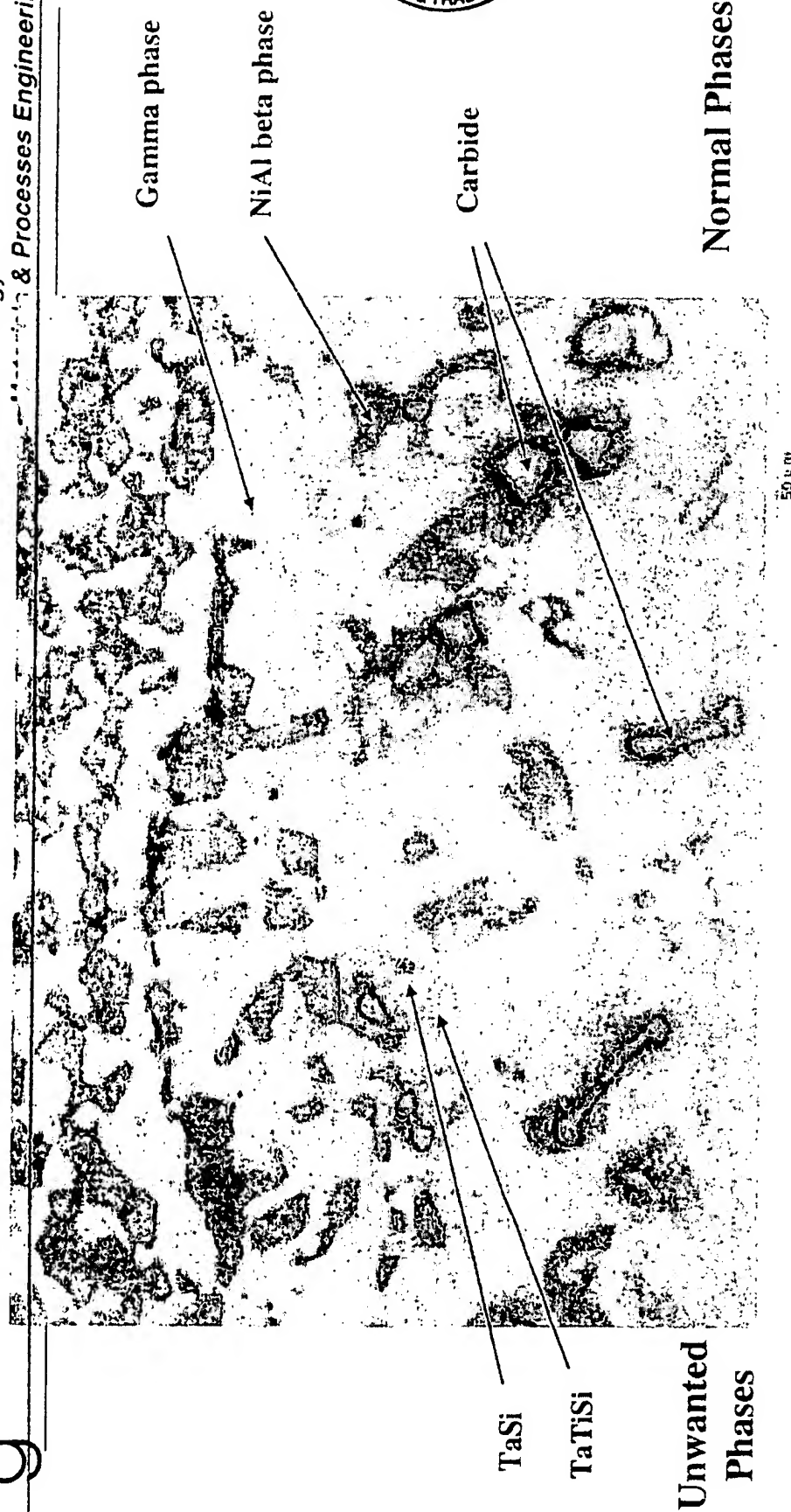


Ganfang Feng

10/16/07

Date

Attachment: Exhibit 1



The co-presence of Ta and Si in the inter-diffusion zone caused formation of TaSi and TaTiSi intermetallic phases, which lead to a hardness increase and embittle the coating. Adding Ta to Si-containing bond coat will cause early TBC failure.